amount of mortar brushed from the edge of the joint following tooling. This type of cleaning is best accomplished with a stiff bristle brush after the mortar has dried, but before it is fully hardened (1–2 hours). Mortar that has hardened can usually be removed with a wooden paddle or, if necessary, a chisel.

Further cleaning is best accomplished with plain water and bristle brushes. If chemicals must be used, their selection should be made with extreme caution. Improper cleaning can lead to deterioration of the masonry units, deterioration of the mortar, mortar smear, and efflorescence. New mortar joints are especially susceptible to damage because they do not become fully cured for several months. Chemical cleaners, particularly acids, should be used only once and should be flushed freely with plain water to remove all traces of the chemicals.

Several precautions should be taken if freshly repointed mortar joints are being cleaned. First, the mortar should be fully hardened before cleaning—30 days is usually sufficient, depending on weather and exposure (as mentioned above, the mortar will continue to cure even after the mortar has hardened). Test panels should be prepared to evaluate the effects of different cleaning methods. Only stiff natural bristle brushes should be used, except on glazed or polished surfaces. Here, only soft cloths should be used. Further information concerning masonry cleaning is presented in Preservation Briefs 1 "The Cleaning and Waterproof Coating of Masonry Buildings."

New construction "bloom" or efflorescence occasionally appears within the first few months of repointing and usually disappears through the normal process of weathering. If the efflorescence is not removed by natural processes, the safest way to remove it is by dry brushing with stiff natural or nylon bristle brushes and water. Hydrochloric (muriatic) acid, is generally ineffective and should be avoided in the removal of efflorescence. In fact this chemical may deposit additional salts, which, in turn, can lead to additional efflorescence.

Scrub Coats: A variety of new and purportedly useful repointing techniques for historic buildings are being offered by contractors which, appear to have limited usefulness in historic preservation. These techniques are identified under a variety of names that include: slurr coats, slurry coating, and, most commonly, scrub coating. All involve the brushing of a thinned, low-aggregate coat of mortar over the entire masonry surface which, when dry, is scrubbed off the brick with a brush, presumably leaving a residue in the mortar joint. These techniques have become increasingly appealing as they are quick, inexpensive in comparison to traditional repointing costs, and do not require particularly skilled labor or craftsmanship. Their greatest attraction lies in repointing large masonry surfaces such as highrise structures, but their benefit to historic masonry is essentially cosmetic. A certain amount of crack sealing in the mortar joint does occur, and for these limited applications it is a useful technique; however, these techniques should not be confused with, or substituted for, repointing. It is not the same process. Slurr coats and slurry and scrub coatings, tend to mask joint detailing or tooling, have a life expectancy of only a few years, and are extremely difficult to clean from the surface of the brick without leaving a residue, called "veiling." While of some limited use in specific instances, these new techniques are not

Figure 5. *The damage to these bricks was caused by using a power saw with a carbide blade to rake out the mortar joints. Note the overcutting of the joint into the brick above the vertical joint. Careful hand work is required to prevent such damage to the brick during joint preparation. Photo: John Myers.*

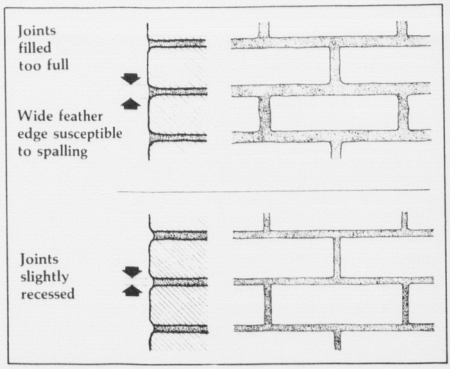

Figure 6. *Comparison of visual effect of full mortar joints vs slightly recessed joints. Filling joints too full hides the actual joint thickness and changes the character of the original brickwork.*

Figure 7. *This photograph shows the significant visual change which can result from improper repointing procedures. Note the increased thickness of the joints, the color variation, and the difference in the method of tooling—all noticeable even from a distance. Photo: Lee H. Nelson.*